

*Citation for published version:*

Spotswood, F, Shankar, A & Piwek, L 2020, 'Changing emotional engagement with running through communal self-tracking: The implications of 'teleoaffective shaping' for public health', *Sociology of Health and Illness*, vol. 42, no. 4, pp. 772-788. <https://doi.org/10.1111/1467-9566.13057>

*DOI:*

[10.1111/1467-9566.13057](https://doi.org/10.1111/1467-9566.13057)

*Publication date:*

2020

*Document Version*

Peer reviewed version

[Link to publication](#)

This is the peer reviewed version of the following article: Spotswood, F., Shankar, A., & Piwek, L. (Accepted/In press). Changing emotional engagement with running through communal self-tracking: The implications of 'teleoaffective shaping' for public health, *Sociology of Health and Illness*., which has been published in final form at <https://doi.org/10.1111/1467-9566.13057>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

**University of Bath**

## **Alternative formats**

If you require this document in an alternative format, please contact:  
[openaccess@bath.ac.uk](mailto:openaccess@bath.ac.uk)

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

1 **Changing emotional engagement with running through communal self-tracking:**  
2 **The implications of ‘teleoaffective shaping’ for public health.**

3 **Introduction**

4 The benefits of physical activity are well established and institutionalised  
5 (Das and Horton 2016). Given the public health burden of obesity (Baum and Fisher  
6 2014), low physical activity rates continue to be a key public health concern (Guthold,  
7 Stevens et al. 2018). In this context, self-tracking of physical activity participation and  
8 other ‘healthy’ behaviours is highlighted in public health research focused on the use of  
9 technology (sometimes referred to as ‘M-health’ (mobile health) research) as having the  
10 potential to prompt and sustain behavior change and subsequently to improve public  
11 health (Piwek et al. 2016). This research tends to take an individualist perspective in  
12 focusing on the benefits of self-tracking, reporting that it can enhance self-knowledge  
13 and personal empowerment (Cox et al. 2013) and prompt change in associated  
14 constructs such as health consciousness (Stiglbauer et al. 2019) and self-efficacy (van  
15 Dijk et al. 2017). These insights are built on assumptions about individual capacity for  
16 self-change if deficits can be overcome. Despite concern over unsupported industry  
17 claims (Heneghan et al. 2012) and prior research that suggests engaging with M-health  
18 apps may not in fact cause sustained behaviour change (Allman-Farinelli, Partridge et al.  
19 2016; Jakicic, Davis, et al. 2016; Svetkey, Batch et al. 2015), medical professionals  
20 promote their potential to revolutionise and disrupt health care, self-care, medical  
21 research, public health practice, and to reduce healthcare expenditure (Lupton 2014,  
22 2017).

23 Understanding of the role of self-tracking technologies in health behaviour compliance  
24 or change has been explored at length through the ‘M-health’ lens (e.g. Mercer, Li, et al.

2016; Patel et al. 2015). This work seeks to understand how particular elements of self-tracking, for example different ‘motivational design components’ (Hassan et al. 2019), can trigger a range of measurable, individual-level health outcomes (Huang, Pham, et al. 2018; Zhang, Li, et al. 2019). One design component of particular interest to M-health researchers is the social media connectivity features of an increasing number of self-tracking consumer technologies (Comstock 2015). Strava, for example, which links to many fitness-tracking wearables, claims that it lets you do “what we call social fitness – connecting and competing with each other... providing motivation and camaraderie” (Strava 2019). In addition to writing comments and messages to each other, users can offer ‘kudos’ by tapping the ‘thumbs up’ button as a way of appreciating others’ efforts and can see and acknowledge each other’s successes on different pre-designated segments or accumulated distance or elevation data. Studies have noted that communicating with other Strava users, and sharing your own achievements, is an inherent part of being a Strava user (Smith and Treem 2017). Sharing and communicating on Strava is part of an overt ‘social fitness’ approach (Lupton 2017; Stragier et al. 2015) and a key feature of the latest communal self-tracking ‘boom’ in self-tracking consumption (Millington, 2016) that moves beyond the personal to the ‘communal’ (Lupton 2018). Existing research into communal self-tracking finds strong evidence for the influence of social interaction on sustaining or changing behaviour (Benetoli et al. 2017; Goodyear and Armour 2018; Oduor et al. 2014; Ploderer et al. 2014; Purpura et al. 2011; Wang et al. 2012).

In addition to ‘M-health’ studies is a well-established body of work that critiques self-tracking as voluntary self-optimization. In this view, self-tracking is an example of neo-liberal governmentality where power is diffused through a myriad of mediating mechanisms and discursive regimes producing subjectivities consonant with the

pervading political ideology (Viseu and Suchman 2010). Related critiques include: self-tracking can be ‘imposed’ as a form of behaviour change (Lupton 2016); can be used to mine data for commercial and political ends (Lupton 2016); and can have negative implications as self-trackers lose bodily sensations through reliance on objective monitoring (Toner 2018).

There is also body of work exploring how self-tracking has emerged in the context of socio-material and technological developments of consumption (Pantzar and Ruckenstein 2015; Pink and Fors 2017) and how it permeates and colours people’s everyday routines and embodied experiences (Charitsis et al. 2018; Mol and Law 2004; Oxlund 2012; Ruckenstein 2014). It has been noted that we know little about people’s practical engagement with self-tracking (Didziokaite et al. 2017; Lomborg and Frandsen, 2016) and that more investigation is needed (Lupton and Smith 2018). Taking up this challenge, studies have begun to explore the everyday, often mundane practices of self-tracking (Didziokaite et al. 2017; Gorm and Shklovski 2019), often by those managing illness or for leisure-time athletes, rather than self-measurement enthusiasts. These studies explore how self-tracking comes to be meaningful and might be, or fail to be, integrated into everyday routines (Lupton and Smith 2018). These studies move away from individualist accounts of self-tracking that emphasise behavioural and psychological outcomes and assume self-tracking can overcome individual deficits and help with achieving politically approved self-management and risk reduction goals. Rather, practice approaches emphasise the ‘ordinary’ (Didziokaite et al. 2017; Lomborg et al. 2018), routine, unreflexive and integrated experience of self-tracking as it permeates everyday life (Pink and Fors 2017); and explore how self-trackers collectively negotiate and reconstitute the conventions relating to different practices through their engagement with it (Gorm and Shklovski 2019; Smith and Treem 2017). Furthermore, self-trackers

and their self-tracking practices (including the materials and technology) are seen as equal partners in the constitution and reconstitution of understandings and routinized enactments of self-tracking (Lupton and Smith 2018).

We seek to extend our understanding of how people enact communal self-tracking to shape their associations with the practice being tracked. Like others (Lupton and Smith 2018), we view communal self-tracking as a number of related ‘practices’. At a minimum these entangled self-tracking social practices include the gathering of data and the activity from which the data originates (Lupton 2014), but also the practices of measuring, analyzing and planning based on the data, and socializing or communicating around data in different ways for different purposes (Smith and Vonthethoff 2017). We explore how these practices, and the practices being tracked, co-evolve through routine, repeated and collective practitioner enactments and how meanings relating to the tracked activity are co-created and digitally mediated via communal self-tracking. Specifically we focus on the entangled teleoaffective structures (Schatzki 2002) of self-tracking and running; that is, the emotional associations and understandings of purpose that co-ordinate how the practices of running and self-tracking are performed by indicating what is to be achieved and why. A practice lens illuminates how routine, communal self-tracking actively shapes teleoaffective structures - associations of purpose and emotion - of the tracked activity. Our findings have implications for the way self-tracking is understood to ‘work’ in maintaining physical activity participation.

### **Self-tracking as health practice**

Prior sociology of health studies highlight that activities relating to health more accurately manifest as a multiplicity of intersecting practices that co-evolve (Blue et al. 2016). This is in contrast to viewing health ‘behaviours’ as discrete activities (Cohn 2014) individually enacted. Practice theory emphasises that over time and through repetition,

socio-material routines become entangled with others (Schatzki et al. 2001) in a ‘bundle’ - separate practices but inherently entangled. The trajectory of different parts of a bundle of practices will impact on other parts in complex ways (Schatzki 2017) and important insights into the context of particular ‘health’ practices emerge from this view. For example Blue et al. (2016) show how smoking is not a discrete behaviour but is shaped into different forms by being integrated with related practices, such as socialising, working, eating and drinking. Similarly, drinking alcohol is shaped into different practices according to its interconnectedness with different socialising or celebratory practices (Ally et al 2016; Meier et al. 2017).

A focus on the way bundled practices are integrated and influence each other is useful for illuminating how self-tracking and the practices being tracked interrelate, particularly in terms of the teleoaffective structure of the tracked activity, experienced as emotional intensities. Although it has been noted that the theorisation of this emotional connectivity between self-tracking and tracked activities has received little attention (Lupton 2017), the nature of the associations with tracked activities emerging from self-tracking has been repeatedly noted. For example, participants gain pleasure from noticing how their physical activities contributed to a ‘good’ data reading (Ruckenstein 2014). Ruckenstein’s respondents began to ‘cherish’ the steps they had taken and develop a more affective relationship either with their walking or the steps taken, creating a feedback loop. Positive experiences of heart-rate tracking have also been noted to lead to a renewed relationship with one’s heart as an object of emotional attachment (Pantzar and Ruckenstein 2015). In the tracking of everyday movement, Ruckenstein (2014) found that tracking the physical activity of housework meant that people gained ‘new value’ from their chores. Other studies found that self-tracking provides activity with purpose that is lost when tracking ceases (Pink and Fors 2017). More negatively, studies

also find that for some tracking itself can be unpleasant (Bergroth 2019), especially when the results of self-tracking are unexpected or undesirable leading to anxiety and fragility. Lupton (2013) also finds that when people find digital interactions ‘tiresome’, they can respond by ‘resisting’ the obligations expected of them, while some ‘play the system’ or withdraw. Pink and Fors’ (2017) respondents note that when self-tracking technology fails, activities like soccer or running can feel ‘like a waste’.

These studies illuminate that self-tracking is entangled emotionally with the practices being tracked. This is often presented in Latourian terms; of technology or data ‘acting on’ emotional and sensory experiences relating to the tracked activity (Charitsis et al. 2017; Klauser and Albrechtslund 2014; Mol 2000), or even acting on embodied instincts (Smith and Vonthethof 2017) and undertandings of what is valued (Ruckenstein 2014). Runners become more competitive because their data will be compared with others (Lupton et al. 2018). Physical activity is perceived as a constant demand, as the absence of data will be noted by followers (Charitsis et al. 2017). When self-tracking is perceived as failing to make people become ‘better people’, behavioural attrition can result (Etkin 2016). The controlling (Lupton et al. 2018) nature of self-tracking is emphasised, with people responding emotionally, such as enjoying the perceived benevolence and validity afforded by devices and data, or resisting the ‘tiresome’ aspects of self-tracking (Ruckenstein 2014).

These studies offer an important starting point for examining the emotional entanglement between communal self-tracking and tracked activities. However, the concept of teleoaffective shaping which emerged from the current study allows this research to advance the theorization of this entanglement by examining the more co-constitutive ways that practitioners use self-tracking to actively shape their routine engagement with tracked activities. In order to examine the role of communal self-

tracking on the associations that people have towards tracked activities, we explored the use of the social fitness app ‘Strava’ by leisure-time runners, asking how self-tracking might encourage sustained healthy physical activity. The practice theory concept of ‘teleoaffective structures’ (Schatzki 2002) was used to sensitise the data. Teleoaffective structures refer to the inherent purpose and collectively agreed emotional associations of practices, which help to coordinate their enactment. As Schatzki (2001, pp.52-3) explains:

“The teleoaffective structure... provides both goals and emotive aspirations: [It includes] a range of acceptable or correct ends, acceptable or correct tasks to carry out for these ends, acceptable or correct beliefs (etc.) given which specific tasks are carried out for the sake of these ends, and even acceptable or correct emotions out of which to do so.”

Teleoaffective structures are ‘of the practice’ template in that they guide practice performance, but they manifest as emotional associations and understandings of the goals and purpose of practice. Practitioners draw on these associations in their enactment of practice, and they can be implicated in failures to continue with a practice. Our analysis identifies how communal self-tracking, bundled tightly with the running it tracks, can actively shape the collectively-held teleoaffective structure of running through a set of mechanisms afforded by the functionality of Strava. We call this active and co-constitutive emotional integration between practices ‘teleoaffective shaping’.

## **Methodology**

In order to explore the ways that communal self-tracking and running are dynamically entangled, this study deployed a multi-stage methodology, all parts of which were approved by the appropriate university ethics committee. To begin with, one of the researchers (author one) joined a local running club in the South-West of England and participated in weekly evening runs for six months. In addition, she joined the club’s



Facebook group and three other running communities on Facebook to observe online interactions during the six months of her club membership. Online posts were read on average twice per week and key themes were noted, particularly relating to self-tracking and Strava usage. The running club was selected for its non-elite ethos. Some club members were new runners while others were more experienced. The researcher also joined Strava to track her own running, as this was the foremost self-tracking app used in the club. She then connected via social media with a selection of the other runners in the club, with their consent, to observe their use of Strava, thereby ‘hanging out’ with runners both in person and online (Molander and Hartmann 2018) in order to access a range of practitioner responses, interactions and emotions.

Strava uses GPS to track running and cycling, and is one of many apps that can be synchronised with wearable self-tracking devices or mobile phones to log and analyze personal physical activity. Strava is also a platform for user-user engagement, and is designed so that a user’s Strava ‘feed’ can easily be shared via other social media platforms. Strava users can compare their performance across different, user-defined ‘segments’ that make up a running or cycling route. Users can win ‘cups’ for being top ten on a segment, receive notifications about personal records, rank themselves against others, and analyze, download and follow other people’s routes.

This first phase of practice immersion highlighted two areas of interest; the variable nature of runners’ engagement with running, and the variable way they engaged with self-tracking. To explore these topics further, a series of in-depth interviews were conducted. The result of this staged data collection was rich qualitative reflection by runners about how and why they use self-tracking and what role self-tracking plays in their engagement with running.

Runners were purposively recruited from the running club and online fora. All runners self-identified as self-trackers. In total, seventeen face-to-face interviews (eight women and nine men) were conducted. Follow-up discussions were conducted with some participants, mediated by Strava messenger. Interviewees self-tracked using a range of wearable devices

Interviews took place in Spring 2016 and lasted between 50 and 150 minutes. All interviews were digitally recorded. Each was conducted using a topic guide that centered on probing the interviewee to explain the detail of how, as well as why, they use self-tracking, and the role that running played in their lives both at the present time and in their past. All interviews were transcribed verbatim. Transcriptions were open and axially coded, and emergent themes identified using NVIVO11. Coding was done in an iterative process whereby researchers interrogated the data, identified emergent themes, considered theoretical implications, and went back to the data to further contextualise emerging theoretical ideas.

## **Findings**

The teleoaffective associations that participants have with running, manifesting as different emotional intensities (Molander and Hartman 2018), are an important context for understanding the way self-tracking interacts with running. The associations inscribed in the practice of running are variable and matter enormously to practitioners. They are experienced as volatile engagements which colour their running 'career' (Shove and Pantzar 2007). Self-tracking practices are tightly bundled with running and act to shape these emotional experiences in a process of 'teleoaffective shaping'. After contextualising the findings with an overview of the experienced emotional intensities of running, we present examples of how our participants used various self-tracking practices to actively

223 shape the teleoaffective structure of running and facilitate their ongoing engagement with  
224 the practice.

225 Variable engagements with the teleoaffective structure of running emerged in our data  
226 through the emotive language used to describe running; as something ‘hated’ or ‘loved’  
227 or something done in the “grim and dark” but also something positive that respondents  
228 would “never stop talking about”. Here, Bronwen (age 36, runner for 4 years) explains  
229 how her early running experiences were painful and emotionally volatile:

230           “I hated every minute of it. The only good thing about it, it was dark, it was in  
231           October so... nobody could see me... [I was] at the back, huffing and puffing  
232           but determined to do it. It was really, really tough”.

233 Other respondents also described running as difficult, even long after running had  
234 become an established routine for them. Anne (age 28, runner for 5 years) explains how  
235 she would tell her friends how much she hated running: “I would say to all the other  
236 people in my running club: ‘You don’t understand! This is so much harder for me than it  
237 is for you because you guys enjoy it.’” Bronwen described sobbing in her husband’s car  
238 when he dropped her off at running club because she desperately did not want to go.  
239 However, emotional associations with running were not straightforward and evolved for  
240 practitioners through each engagement, and through engagement with related practices  
241 such as socializing with running club members and taking part in races. Over time, a  
242 number of emotions associated with running would run counter to each other (Woerman  
243 and Rokka 2015). Running was associated with personal and public pride,  
244 accomplishment and joy. Anne explained how an ex-boyfriend told her she would never  
245 be a runner due to her body shape but now she runs regularly. Anne describes feelings of  
246 accomplishment which she accesses through her enactment, which she draws on to  
247 protect her loyalty to the practice.

248 Entwined with the emotional associations of running is its teleology, or purpose.  
249 Running is described by different participants as a way to overcome embodied  
250 difficulties, to overcome psychological obstacles (Wiltshire et al. 2017), to represent  
251 achievement and model commitment. Some mentioned the purpose of running as being  
252 for health or fitness and for many it was a way to socialise. Bronwen ran for instrumental  
253 reasons initially, to demonstrate commitment to her teenage son. Then it became a way  
254 spend time as a family, a way to socialise and a way to mentor others. For Anne, part of  
255 the reason she continues to run is because it proves her ex-boyfriend wrong and so  
256 provides a sense of personal pride as well as a means to create her desired body shape.

257 Through ongoing repeat performance of running in different contexts, and through  
258 interaction about running, the anticipated teleoaffective structure of running is constantly  
259 re-constituted. Teleoaffective structures are not static, but are subject to change as  
260 practitioners experience actualised emotional episodes, assess these and amend their  
261 ongoing engagement with running (Molander and Hartman 2018). In other words,  
262 practitioners actively shape their future engagement with running by creating, enhancing  
263 or protecting particular versions of it. For example, Zak explains how he managed to  
264 change how he thinks about running in line with his colleague's advice; moving away  
265 from focusing on how hard it is towards the enjoyment and achievement associated in  
266 completing a half marathon:

267        "I was speaking to a colleague... and we were talking about running and I said I  
268        have always fancied doing a half marathon. And she was like, 'well you need to  
269        change how you think about running. Rather thinking about it as something  
270        that's hard work, think about it as time away from stuff and that opportunity to  
271        get your thoughts to yourself and all that stuff'. And I literally... I decided I was  
272        going to run the [local] half marathon in the September..."

273 Zak's story illustrates the active involvement of practitioners in their future engagement  
274 with running through actively shaping associations relating to its purpose and meaning.  
275 Our study focuses particularly on the way practitioners use communal self-tracking to  
276 shape their future engagement and the running practice template, positioning communal  
277 self-tracking as a collective means of meaning production (Lomborg and Frandsen 2016).  
278 The mechanisms we have identified below are examples of the way that self-tracking  
279 affords the active teleoaffective shaping of running by enabling practitioners to work on  
280 their collectively held emotional and purpose-related associations with running.

281 *Mechanism for teleoaffective shaping: Labelling*

282 Our data highlights the way that Strava affords the labelling of running engagements as a  
283 mechanism for establishing, changing or emphasizing practitioner-held meanings and  
284 emotions associated with running. Strava auto-assigns running logs with simple labels  
285 such as 'afternoon run', 'morning run' and so on, depending on the time of day. The user  
286 is always easily able to change the name of a run should they wish. Some of our  
287 respondents reflected that they would change these labels to explain when expectations  
288 of performance were not met; for example to denote illness, slow-paced recovery after a  
289 race or a slower running partner. However, labelling was also used to assign runs with  
290 particular personal value. Some respondents were adamant that everyday commutes to  
291 work should not "litter" the Strava feed of people they follow, and mostly only used  
292 Strava to record fun, social runs or hard training runs because these were the runs that  
293 "counted". However, others, like Mark (age 30, runner for 15 years), logged every run  
294 but simply changed the name of 'proper' runs such as interval sessions and club training  
295 to reflect their intensity or significance. Similarly, Ralph (age 38, runner for 8 years)  
296 explained that he changes the name of runs when he has been somewhere interesting. He  
297 tends to ignore the daily commute, which he tracks for completeness.

298 The following list of labelled runs is taken from Hettie's Strava feed over the course of  
299 three weeks:

300 "Evening easy run... ventured over some trails thanks to a v bright moon"

301 "Couldn't face being sociable tonight so lone run it was"

302 "4.5/5 miles easy chat run with Kathy"

303 "Long run route with the team"

304 "Club run with cool down"

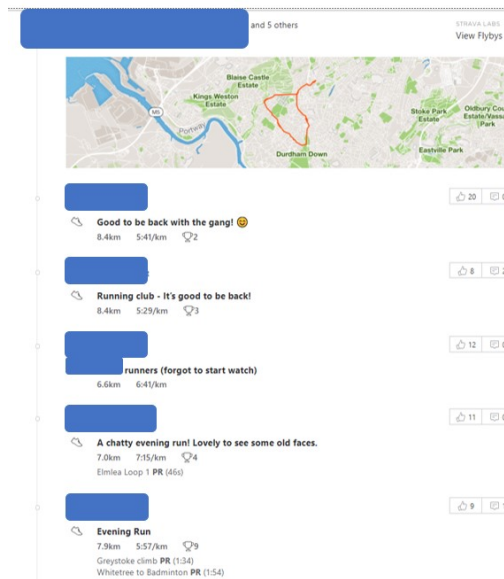
305 Hettie (age 23, runner for 5 years) actively assigns purpose, emotion, projects and goals  
306 to the practice of running through these labels (Schatzki 2002). She positions running as  
307 sociable, an opportunity for time alone, an opportunity for relaxation or as part of the  
308 routine performance of club membership. The labels both create a record of what  
309 running meant in each unique enactment, but also creates meaning itself, as labels  
310 become anchors for understandings about engagements with future running. Labelling  
311 opens up the possibility for runners that enacting running can draw on a number of  
312 associations. The purposeful creation of meaning through labelling can be taken forward  
313 to organise future enactments.

314 As well as helping to organise ongoing individual practitioner engagements, labelling was  
315 enacted in the context of 'social fitness' to provide a visible and shared label around  
316 which associations can be collectively negotiated. For example, labels might actively  
317 invite affirmation that running is tough and as such represents an enjoyed shared  
318 moment of triumph amongst a tight group. Glen's label for a hard training run illustrates  
319 this: "Some sort of masochistic hill torture session – loved it! Cheers fellas" (Glen, age  
320 42, runner for 10 years). Glen is creating emotional associations and purpose for his own

321 engagement with a version of running that most appeals. However, he is also inviting  
322 interaction around the toughness of the training session and creating a sense of  
323 exclusivity amongst the ‘fellas’ with whom he shared the engagement. His label reframes  
324 the run from being just ‘tough’ to being collectively and individually appealing in its  
325 toughness. Similarly, other labels invite interaction around the fun of running, as when  
326 Rose’s labelled a run as “Tough run with the Tuesday crowd. Thanks guys!” (Rose, age  
327 31, runner for 4 years). The interactions prompted by these labels affords collective  
328 affirmation about the purpose, expectation and moods associated with the running  
329 practice template which are constituted and reconstituted via interactions facilitated by  
330 the self-tracking app as much as they are by the repeated performances of these versions  
331 of running practice.

332 *Mechanism for teleoaffective shaping: Reward*

333 Strava provides rewards for achievements for top ten achievements in different segments  
334 in the form of trophies that automatically appear in a user’s feed. However, runners also  
335 proactively *use* Strava to reward engagements with running and this repositions running  
336 positively; away from any actualised sense of embodied struggle. In the Strava interaction  
337 extract below, club members self-refer as a ‘gang’ and reward fellow members through  
338 mutual appreciation, comments of support and multiple offerings of ‘kudos’ (visible  
339 through the number of ‘thumbs ups’ per comment):

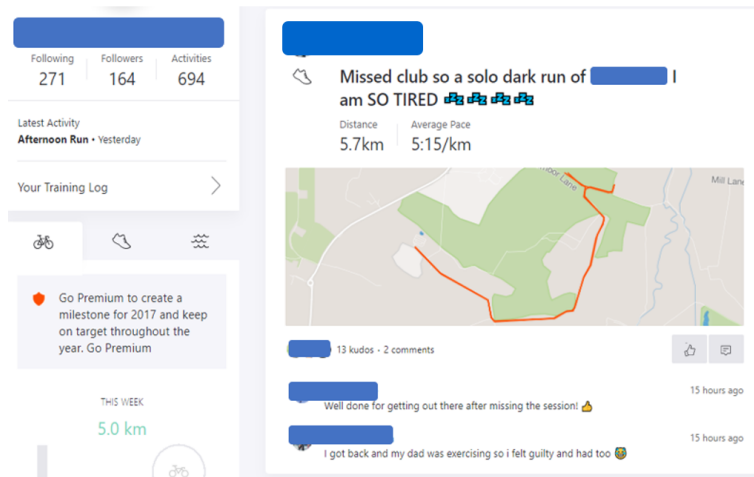


340

341 The run, however it was in fact experienced, is positioned through this rewarding activity  
 342 as social, 'chatty' and 'lovely', which is reinforced through the collective 'kudos' and co-  
 343 created narrative. The teleoaffective associations of 'running as social', repeatedly created  
 344 through such collective rewarding, can be carried forward into future engagements with  
 345 running.

346 The process of rewarding the Strava-mediated construction of meanings associated with  
 347 running also works when the engagement with running is a solitary activity. In the  
 348 following extract, Hettie is transparent about the difficulties she felt in getting out for a  
 349 solo run, but the comments and 'kudos' her log attracts shift the emphasis from the  
 350 hardship of her individual encounter to the social reward her Strava entry attracts:





351

352 Hettie responds to the comment from her ‘follower’ within the hour, showing how the  
 353 comments function in Strava also facilitates an opportunity for assessing the bygone  
 354 performance of running and for guiding its future practical enactment (Molander and  
 355 Hartmann 2018). She does this by shaping emotional associations away from hardship or  
 356 guilt and, in this case, towards accomplishment. The reward offered by followers in this  
 357 vein allows the practitioner to continue with running even if difficult, because it has been  
 358 repositioned as worthwhile. Indeed, the very difficulty often becomes part of the  
 359 routinised and anticipated appealing aspects of running. Runners know that the reward  
 360 will come once the run appears on Strava, and this may explain some of the ‘devastation’  
 361 our participants described when their self-tracking technology failed, because they will  
 362 miss the rewards.

363 As demonstrated by the number of ‘kudos’ rewards in the above extracts, Strava’s kudos  
 364 button represents a popular way of demonstrating reward, and a useful cue for followers  
 365 and trackers to scan for clusters of collective appreciation. Bronwen, for example talks  
 366 about the ‘kudos’ button, noting that, “There is a lot of support for each other because  
 367 we all know how hard it can be sometimes to do it.” For Bronwen, receiving multiple  
 368 ‘kudos’ for a run reframes her effort as worthwhile in the eyes of a social network of  
 369 other runners, even if no comments are written. For Ralph, social affirmation through

370 the kudos function is a way of starting a conversation in Strava about particular runs or  
371 future plans. He explained that he “likes to see what people are noticing” and he will  
372 often “follow up with my own comments”. For him, ‘kudos’ carries a lot of meaning; of  
373 respect and interest, and it positions his activity as having been noted by particular  
374 ‘followers’, which he will check, so that he might follow up with a comment or direct  
375 message to individuals. It is also significant how many thumbs up an activity attracts, and  
376 Ralph explained that he will notice the volume of support for particular runs and often  
377 ‘click’ the kudos button himself. Jane (age 38, runner for 5 years) explains that often she  
378 barely engages with her actual running data, but routinely scans the Strava feed for shows  
379 of support. She explains that ‘kudos’ is an ‘automatic’ or routinised part of interacting  
380 through the Strava:

381 “There is always the kudos, always the thumbs up, that is almost an automatic.  
382 You don’t always look at [the run feed] but you give a thumbs up.”

383 Providing reward for others is part of the self-tracking bundle of practices that is  
384 facilitated by Strava (Lupton 2017). The labelling and ‘kudos’ and comment functions  
385 allow runners to easily and collectively create a narrative around the practice of running  
386 that ameliorates individualised experiences of enactment. In this way, running becomes a  
387 socially constructed and dynamically negotiated activity. It is both a rewarded and  
388 rewarding activity facilitated through these easy, automated virtual interactions and  
389 recreated through every repeated ongoing engagement with running.

390 *Mechanism for teleoaffective shaping: Materialising effort*

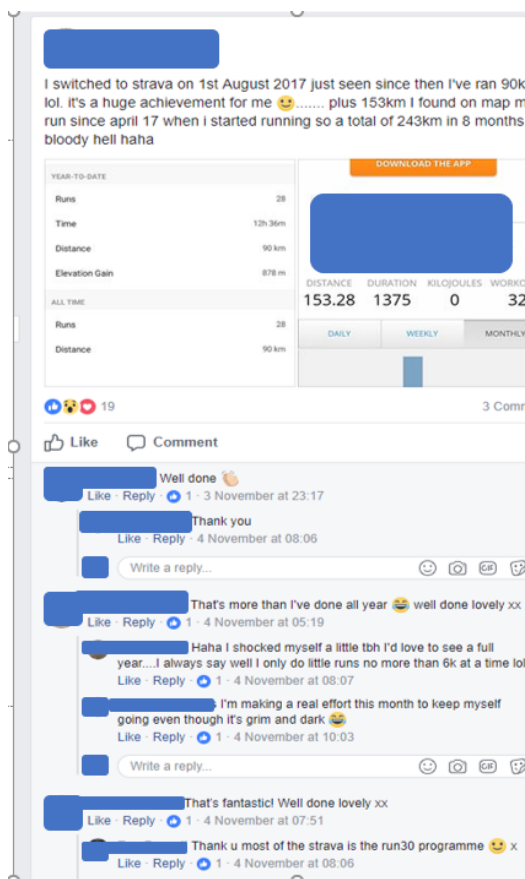
391 Materialisation refers to the use of self-tracking to make permanent and concrete  
392 otherwise intangible engagement with running, by visualising it materially. This drive to  
393 capture physical accomplishments has been noted by others (Throsby 2016). When  
394 reflecting on their logging activities, practitioners describe this logging as the

395 materialisation of the intangibility of running and it is highly significant for their ongoing  
396 relationship with running. Materialisation was often underpinned by principles of  
397 completeness and accuracy, and framed by rules and procedures for maintaining  
398 completeness. For example, Sam (age 40), a daily logger and established runner of 17  
399 years, explains that he logs every run, and indeed every bike ride and swim, that he  
400 completes, no matter how short. Sam's commute to work on foot might only be a few  
401 kilometers, but having a complete log feels important; to create the full picture of his  
402 commitment. He writes notes to explain the context of particular efforts, and ensures  
403 that no run is missed, however short. Sam's explanation for why he is preoccupied with  
404 completeness is twofold. On the one hand he explains that he is "scared to miss a day; it  
405 feels like I'm losing fitness", and on the other he uses his impressively crowded Strava  
406 feed as the basis for friendly competition amongst his co-workers: "It's about who's  
407 done the most and who's been fastest on the way in". Sam works to materialise his  
408 running in order to make it meaningful for his understanding of his own fitness and as  
409 an enduring record, which is a source of pride.

410 Zak is another respondent who works hard to ensure his Strava feed is fully and  
411 materially illustrative of his efforts, and like Sam he uses this as a tangible account of his  
412 commitment to running, and as a basis for engaging with an audience. In Zak's case the  
413 audience is both on and offline. Zak (age 37, runner for 6 years) set a challenge for  
414 himself to run every day in January, but this carried on and on until "at one point I was  
415 saying I was on January the 79<sup>th</sup>; it was a resounding joke. It was always January". He  
416 explained how soon he would have to announce at his running club that he was planning  
417 on stopping because people would expect to see his Strava feed every day. If he failed to  
418 log a run he would receive messages via Strava asking what happened. For both Sam and  
419 Zak, self-tracking provides a means to create and protect an accumulated Strava profile

and to interact around this profile with an audience. This positions their engagement with running as committed, extreme and consistent, which is meaningful to them and shapes the teleoaffective associations of their future engagements with running.

The 'pride' in accomplishment over time is evident in Eliza's Facebook post about her Strava profile:



Eliza (age 43, runner for 2 years) announces to her Facebook followers that she has accomplished a huge achievement by accumulating 90km of running since 1<sup>st</sup> August 2017, which is illustrated through the screen shot from Strava that she shares on Facebook. Eliza is 'shocked' at her feat and uses the materialisation of her achievement as a basis for interaction. Specifically, she attracts social affirmation that serves to position her relationship with running as accomplishment and success and to move it

away from, as one of the follow-up comments notes, an anticipated sense that it requires ‘real effort’ and happens in the ‘grim and dark’. The visibility of her accumulated totals in Strava allows runners like Eliza to associate unique engagements with running, which may be ‘grim’ through the lens of a larger project which has tangible form and is made visible for social reward.

## **Discussion**

In developing the concept of ‘teleoaffective shaping’ as an outcome of communal self-tracking, we draw on Molander and Hartmann’s (2018) focus on emotion in the evolution of practice. They specify that alongside the routine way that practitioners draw on anticipated teleoaffective associations in their actual enactment of practice, practitioners also routinely assess emotional experiences and trigger “adjustment of planned future behavior” (p.12). This assessment and shaping of future engagement happens as part of the routine engagement with practice, i.e. the practice *allows* practitioners to ‘assess’ their engagement in an ongoing process which involves monitoring past engagements, understanding anticipated engagements and understanding the desired outcomes of future engagements. Our findings suggest that our practitioners are able to use the various practices that make up the communal self-tracking bundle to ‘work on’ the teleoaffective associations they hold with running, and shape their anticipated teleoaffective engagement with running. These reworked teleoaffective structures can be carried forward, repeated and reinforced through both communal self-tracking interactions and actualised future experience.

Our study makes three important contributions to the existing body of research exploring the potential of communal self-tracking for physical activity participation. First, we illustrate a new way of understanding how communal self-tracking works to support sustained physical activity, which may be experienced as unpleasant or have unappealing

associations. Our study illustrates that practitioners can change the way they engage with running. Our respondents relabeled exhausted solo night runs to attract affirmation and support for a version of running emphasizing self-discipline and commitment. They used the kudos and comments to reaffirm informal 'club' membership and reposition running as focusing on social bonds. They shared accumulated logs on Facebook to discuss their achievement and invited a shared sense that running is a hard but a worthwhile accomplishment. Through these interactions, running becomes reconstituted as a socially shared and meaningful practice, manifesting as multiple versions, to which self-tracking practitioners can align themselves. Our study therefore provides evidence for a developed understanding of the way that the tight bundling of communal self-tracking and physical activity might work for supporting physical activity. Communal self-tracking provides mechanisms for acting upon the emotional and purpose-oriented associations of physical activity in order to move it from having limited appeal to having dynamic appeal that can more effectively retain practitioner attention and loyalty as careers develop. Emotional entanglement between self-tracking and tracked activities has been noted by others (Lupton 2013; Ruckenstein 2014), and our study provides a theoretical mechanism for understanding this entanglement.

Second, our study emphasises the active part that practitioners play in the dynamic creation and recreation of meanings relating to physical activity practice. Existing studies tend to imagine users as 'responsive' to doses of the social networking functions of self-tracking apps (Hassan et al. 2019), or to the agency of self-tracking technology (Klauser and Albrechtslund 2014). In positive terms, self-tracking is seen as boosting social comparison, emotional support, enjoyment and empowerment, and ultimately increases motivation to keep active. In contrast, our analysis foregrounds the recursive nature of practices and practitioner performances, which is a strong theme in recent practice-

oriented consumption studies (Phipps and Ozanne 2017; Molander and Hartmann 2018) with neither practitioner agency nor socially normative patterns of activity taking center stage. Rather, practitioners are central in the dynamics of ongoing practice change (Maller 2015). Our data illustrates how the appeal of running, and by implication ongoing running ‘careers’, are the result of a dynamic evolution of the way running is experienced, anticipated and worked on to become progressively more ‘agreeable’ in different ways. Respondents describe hating running initially but now talking about it ‘all the time’, sharing accomplishments and relishing in their career stories. Via Strava, adaptive practitioners share their accumulated stats or the labels they assign to runs and invite collective affirmation for the versions of running that are being emphasised through the online narrative, and for those which are being mollified. The survival of running practice is therefore the result of a dynamic interplay between collective practitioner negotiations of meaning and ongoing performances in which those meanings are enacted; both of which are routinised as part of the practice bundle of running and communal self-tracking. This insight advances existing conceptualisations by moving away from the notion of self-trackers as ‘responsive’ and, rather, foregrounding both the entangled nature of self-tracking and running, and the entangled nature of performances and practice.

Third, our findings also suggest potential lessons for digital health interventions seeking to support sustained physical activity because they highlight the multitude of ways that Strava facilitates interactions for teleoaffective shaping. Teleoaffective shaping is mediated in some cases by direct engagements with data, for example when practitioners concern themselves with accumulated totals. However, in some cases, practitioners bypass their data altogether and focus on the comments and kudos they receive for logging a run, irrespective of the data produced. Practitioners examine lists of ‘kudos’

and pursue ongoing interactions with particular followers, or create labels that ‘speak’ to particular groups with whom a run was in fact performed. Strava provides multiple ways for users to interrelate, from leaderboards to kudos, comments, direct messages and exporting data to other social platforms. Relating to a sense of the multiple, interrelated practices of self-tracking, our findings concur with other studies (Mol 2000; Ruckenstein 2014) which have noted how practitioners engage with self-tracking in numerate ways depending on personal projects and trajectories (Lupton and Smith 2018). Our findings indicate that this flexibility and multiplicity in design underpins the sense of active participation as opposed to loss of agency. We note that other studies have reported that respondents can feel ‘controlled’ by wearable technology and self-tracking, which can lead to attrition and protest (Ruckenstein 2014), or that social connectivity can feel tokenistic (Fotopoulou et al. 2016) or part of a marketing agenda (Charitsis et al. 2018). Strava, in providing a range of integrated ways through which teleoaffective shaping projects can be undertaken, has created a diverse experience of social interaction and meaning making, which in fact ties closely with the benefits of communal physical activity found in other studies (Copelton 2010; Wiltshire et al. 2018). We note that device manufacturers assume that users primarily are interested in ‘getting more health-related information’ (Pantzar and Ruckenstein 2015), but in fact much of this ‘health optimization’ data can fail to engage people (Ruckenstein 2014) and attrition from self-tracking is common (Lupton and Smith 2018). It may be that other features, including the capacity for free-flowing communal dialogue, are most important for sustained engagement with self-tracking and the tracked activity. It is therefore important to note that a potential downside to the routinised social interaction afforded by Strava may emerge from the entangled nature of enacting and sharing physical activity accomplishments. In the event of technological failure, the inability to share and interact



around some tracks may have a disruptive or even reverse (negative) effect on the teleoaffective shaping of physical activity.

Finally, it is important to highlight a key limitation of our study, which is its particular focus on the positive teleoaffective shaping of running by users of a social fitness app. This was a useful context for a first exploration of the concept of teleoaffective shaping, but future studies might consider the multiple ways that self-tracking affords teleoaffective shaping of tracked practices. For example, future research might interrogate how teleoaffective shaping happens in private self-tracking, and might focus on how a range of collective associations relating to particular practices are shaped and evolve in different ways. Teleoaffective shaping might be implicated in how notions of competitiveness, adventurousness or obsessiveness might be cultivated through self-tracking. We begin to see that interaction around Zak's data has begun to collectively legitimise running every day, and possibly to the emergence of dangerous bodily practices noted in other self-tracking studies (Charitsis et al. 2018). Similarly, other respondents in our research seek and receive social affirmation for extreme or adventurous patterns of running and in other cases, personal profiles are collectively rewarded for their volume. Future research might explore a range of associations that may be shaped powerfully through communal and other forms of self-tracking via mechanisms including, but expanding beyond, those we have identified.

Acknowledgements: We would like to thank Gareth Wiltshire for reviewing an earlier version of this manuscript.

## References

- Allman-Farinelli, M., Partridge, S. McGeechan, K. Balestracci, K., Hebden, L., Wong, A. et al. (2016) A mobile health lifestyle program for prevention of weight gain in young adults (TXT2BFiT): Nine-month outcomes of a randomized controlled trial, *JMIR M-health and uHealth*, 4, 1-78
- Ally, A.K., Lovatt, M., Meier, P.S., Brennan, A. and Holmes, J. (2016) Developing a social practice-based typology of British drinking culture in 2009-2011: implications for alcohol policy analysis, *Addiction*, 111, 1568-79
- Ancker, J., Witteman, H., Hafeez, B. (2015) “You get reminded you’re a sick person”: personal data tracking and patients with multiple chronic conditions. *J Med Internet Res*, 17
- Baum, F. and Fisher, I. (2014) Why behavioural health promotion endures despite its failure to reduce health inequities, *Sociology of Health and Illness*, 36, 2, 213–25
- Benetoli, A., Chen, F.T. and Aslani, P. (2017) Consumer health-related activities on social media: Exploratory study, *Journal of Medical Internet Research*, 16, 5, e128
- Bergroth, H. (2019) ‘You can’t really control life’: dis/assembling self-knowledge with self-tracking technologies, *Distinktion: Journal of Social Theory*, 20, 2, 190-20
- Blue, S., Shove, E., Carmona, C. and Kelly, M.P. (2016) Theories of practice and public health: understanding (un)healthy practices, *Critical Public Health*, 26, 1, 36–50
- Charitsis, V., Yngfalk, A.F. and Skalen, P. (2018), ‘Made the run’: Biopolitical marketing and the making of the self-quantified runner, *Marketing Theory*, 1-20c

576 Comstock, J. (2015) IMS: 1 in 10 health apps connects to a device, 1 in 50 connects to  
 577 healthcare providers, *Mobi Health News* [online]. Available from  
 578 [https://www.mobihealthnews.com/46863/ims-1-in-10-health-apps-connects-to-a-](https://www.mobihealthnews.com/46863/ims-1-in-10-health-apps-connects-to-a-device-1-in-50-connects-to-healthcare-providers)  
 579 [device-1-in-50-connects-to-healthcare-providers](https://www.mobihealthnews.com/46863/ims-1-in-10-health-apps-connects-to-a-device-1-in-50-connects-to-healthcare-providers)

580 Cohn, S. (2014) From health behaviours to health practices: an introduction, *Sociology*  
 581 *of Health and Illness*, 36, 2, 157–62

582 Copelton, D.A. (2010) Output that counts: pedometers, sociability and the contested  
 583 terrain of older adult fitness walking, *Sociology of Health and Illness*, 32, 2, 304-318

584 Cox, A.L., Bird, J. and Fleck, R. (2013) Digital Epiphanies: How self-knowledge can  
 585 change habits and our attitudes towards them, British HCI habits workshop

586 Das, P. and Horton, R. (2016) Physical activity—time to take it seriously and  
 587 regularly, *The Lancet*, 388, 10051, 1255–6

588 Didziokaite G, Saukko P and Greiffenhagen C (2017) The mundane experience of  
 589 everyday calorie trackers: beyond the metaphor of quantified self, *New Media & Society*,  
 590 20, 1470–1487.

591 Ellis, D. A., and Piwek, L. (2018) Failing to encourage physical activity with wearable  
 592 technology: what next? *Journal of the Royal Society of Medicine (JRSordinary M)*, 111, 9,  
 593 310-13.

594 Etkin, J. (2016) “The Hidden Cost of Personal Quantification, *Journal of Consumer*  
 595 *Research*, 42 (April), 967-84

596 Fotopoulou, A., O’Riordan, K. (2017) Training to self-care: fitness tracking, biopedagogy  
 597 and the healthy consumer, *Health Sociol Rev*, 26, 54-68

598 Goodyear, V.A. and Armour, K.M. (2018) Young people's perspectives on and  
 599 experiences of health-related social media, apps, and wearable health devices, *Social*  
 600 *Sciences*, 7, 137, 1-15

601 Gorm, N. and Shklovski, I. (2019) Episodic use: Practices of care in self-tracking, *New*  
 602 *Media & Society*, 1-17

603 Guthold, R., Stevens, A., Riley, L. and Bull, F. (2018) Worldwide trends in insufficient  
 604 physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys  
 605 with 1·9 million participants, *The Lancet*, 6, 10, e1077-86

606 Hassan, L., Dias, A. and Hamari, J. (2019) How motivational feedback increase user's  
 607 benefits and continued use: A study on gamification, quantified self and social  
 608 networking, *International Journal of Information Management*, 46, 151-62

609 Heneghan, C., Howick, J., O'Neill, B., Gill, P. J., Lasserson, D. S., Cohen, D., and  
 610 Thompson, M. (2012) The evidence underpinning sports performance products: a  
 611 systematic assessment, *BMJ Open*, 2, 4, e001702

612 Huang, H.C., Pham, T.T.L., Wong, M.K., Chiu, H.Y., Yang, Y.H., Teng, C.I. (2018) How  
 613 to create flow experience in exergames? Perspective of flow theory, *Telematics and*  
 614 *Informatics*, 35, 5, 1288-96

615 Jakicic, J.M., Davis, K.K., Rogers, R.J., King, W.C., Marcus, M.D., Helsel, D., Rickman,  
 616 A.D., Wahed, A.S. and Belle, S.H. (2016) Effect of Wearable Technology Combined with  
 617 a Lifestyle Intervention on Long-Term Weight Loss: the IDEA Randomized Clinical  
 618 Trial, *JAMA*, 316, 11, 1161-71

619 Klauser, F.R. and Albrechtslund, A. (2014) From self-tracking to smart urban  
 620 infrastructures: towards an interdisciplinary research agenda on Big Data, Surveillance  
 621 and Society, 12, 2, 273-286

622 Lomborg, S. and Frandsen, K. (2016) Self-tracking as communication, Information,  
 623 Communication and Society, 19,7, 1015–27

624 Lomborg, S., Thylstrup, N. B., & Schwartz, J. (2018). The temporal flows of self-  
 625 tracking: Checking in, moving on, staying hooked. *New Media & Society*, 20, 12, 4590-  
 626 4607.

627 Lupton, D. (2013) Quantifying the body: monitoring and measuring health in the age of  
 628 M-health technologies, *Critical Public Health*, 23, August, 393–403

629 Lupton, D. (2014) Self-tracking Cultures: Towards a Sociology of Personal Informatics.  
 630 In *Proceedings of the 26<sup>th</sup> Australian Computer-Human Interaction Conference on*  
 631 *Designing Futures: The Future of Design*, New York, NY: ACM, 77-86

632 Lupton, D. (2016) The diverse domains of quantified selves: self-tracking modes and  
 633 dataveillance, *Economy and Society*, 45, 1, 101-122

634 Lupton, D. (2017) How does health feel? Towards research on the affective atmospheres  
 635 of digital health. *Digital Health*, 3, 1-11

636 Lupton, D. (2018) 'Lively Data, Social Fitness and Biovalue: the intersections of Health  
 637 Self-Tracking and Social Media. In Burgess, J., Marwick, A. and Poewell, P. (eds) *The*  
 638 *SAGE Handbook of Social Media*, chapter 31, SAGE: London

639 Lupton, D.; Pink, S.; Labond, C.H. and Sumartojo, S. (2018) Personal Data Contexts,  
640 Data Sense, and Self-Tracking Cycling, *International Journal of Communication*, 12, 647-  
641 65

642 Lupton, D. and Smith, G.J.D. (2018) ‘A Much Better Person’: The Agential Capacities of  
643 Self-tracking Practices, In Ajana, B (ed.), ‘Metric Culture: Ontologies of Self-Tracking  
644 Practices’, *Emerald*, 57-75

645 Meier, P.S., Warde, A. and Holmes, J. (2017) All drinking is not equal: how a social  
646 practice theory lens could enhance public health research on alcohol and other health  
647 behaviours, *Society for the Study of Addiction, Addiction*, 113, 206-213

648 Mercer K., Li, M., Giangregorio, L., Burns, C., Grindrod, K. (2016) Behavior change  
649 techniques present in wearable activity trackers: a critical analysis, *JMIR M-health*  
650 *Uhealth*; 4, 2, e40

651 Millington, B. (2016) Fit for presumption: interactivity and the second fitness boom,  
652 *Media, Culture and Society*, 38, 8, 1184–200.

653 Mol, A. and Law, J. (2004) Embodied action, enacted bodies: the example of  
654 hypoglycaemia, *Body and Society*, 10, 43–62.

655 Molander, S. and Hartmann, B. (2018) Emotion and practice: Mothering, Cooking, and  
656 Teleoaffective Episodes, *Marketing Theory*, 18, 3, 371-390

657 Oduor, M., Alahaivala, T. and Oinas-Kukkonen, H. (2014) Persuasive software design  
658 patterns for social influence, *Pers Ubiquit Comput*, 18, 1689-1704

659 Oxlund, B. (2012) Living by numbers: the dynamic interplay of asymptotic conditions  
 660 and low cost measurement technologies in the cases of two women in the Danish  
 661 provinces, *Suomen Antropologi*, 37, 42–56

662 Pantzar, M. and Ruckenstein, M. (2015) The Heart of Everyday Analytics: Emotional,  
 663 Material and Practical Extensions in Self-tracking Market, *Consumption Markets and*  
 664 *Culture*, 18, 1, 92-109

665 Patel, M.S., Asch, D.A., Volpp, K.G. (2015) Wearable devices as facilitators, not drivers,  
 666 of health behavior change. *JAMA*, 313, 5, 459-60

667 Phipps, M. and Ozanne, J. (2017) Routines Disrupted: Reestablishing Security through  
 668 Practice Alignment, *Journal of Consumer Research*, 44 (August), 361-80

669 Pink, S. and Fors, V. (2017) Being in a mediated world: self-tracking and the mind-body-  
 670 environment, *Cultural Geography*, 24, 375–388

671 Piwek, L., Ellis, D.A., Andrews, S., Joinson, A. (2016) The rise of consumer health  
 672 wearables: promises and barriers, *PLoS Med*, 13, 2), e1001953

673 Pols, J. and Willems, D. (2011) Innovation and evaluation: taming and unleashing  
 674 telecare technology, *Sociology of Health and Illness*, 33, 484-98

675 Purpura, S., et al. (2011) Fit4Life: the design of a persuasive technology promoting  
 676 healthy behavior and ideal weight, *Proceedings of the SIGCHI Conference on Human*  
 677 *Factors in Computing Systems*, Vancouver, 423-32

678 Ruckenstein, M. (2014) Visualized and interacted life: personal analytics and engagements  
 679 with data doubles. *Societies* 4, 1, 68–84

680 Sanders, R. (2017) Self-tracking in the digital era: biopower, patriarchy, and the new  
681 biometric body projects, *Body and Society*, 23, 1, 36–63

682 Schatzki, T. (2001) Practice mind-ed orders. In Schatzki, T., Cetina, K.K. and von  
683 Savigny, E. (eds) *The Practice Turn in Contemporary Theory*, London, UK: Routledge,  
684 50-63

685 Schatzki, T. (2002) *The Site of the Social*, University Park, PA: Penn State University  
686 Press

687 Schatzki, T. (2017) Saying, Texts and Discursive Formations, In Hui, A., Schatzki, T. and  
688 Shove, E. (eds) *The Nexus of Practices: Connections, Constellations, Practitioners*,  
689 Abingdon: Routledge, 126-140

690 Shove, E. and Pantzar, M. (2007) Recruitment and reproduction: the careers and carriers  
691 of digital photography and floorball, *Journal of Human Affairs*, 17, 2

692 Smith, G.J.D and Vonthethoff, B. (2017) Health by numbers: exploring the practice and  
693 experience of datafied health, *Health Sociology Review*, 26, 6–21

694 Smith, W.R. and Treem, J. (2017) Striving to Be King of Mobile Mountains:  
695 Communication and Organizing Through Digital Fitness Technology, *Communication*  
696 *Studies*, 68, 2, 135-151.

697 Stiglbauer, B., Weber, S. and Batinic, B. (2019) Does your health really benefit from  
698 using a self-tracking device? Evidence from a longitudinal randomized control  
699 trial, *Computers in Human Behavior*, 94, 131-9

700 Stragier, J., Evens, T. and Mechant, P. (2015) Broadcast yourself: an exploratory study of  
701 sharing physical activity on social networking sites, *Media Int Aus*, 155, 120-9



702 Strava (2019). *Strava | Run and Cycling Tracking on the Social Network for Athletes*. [online]  
703 Available at: <https://www.strava.com/features> [Accessed 29 Oct. 2019].

704 Svetkey, L.P., Batch, B.C., Intille, S.S., Corsino, L., Tyson, C.C., Bosworth, H.B,  
705 Grambow, S.C., Voil, C., Loria, C., Gallis, J.A., Schwager, J. and Bennett, G.B. (2015)  
706 Cell Phone Intervention for You (CITY): A Randomized, Controlled Trial of Behavioral  
707 Weight Loss Intervention for Young Adults Using Mobile Technology, *Obesity*, 23, 11,  
708 2133

709 Throsby, K. (2016) *Immersion: Marathon Swimming, Embodiment and Identity* (New  
710 Ethnographies), Manchester: Manchester University Press

711 Toner, J. (2018) Exploring the dark-side of fitness trackers: Normalization,  
712 objectification and the anaesthetisation of human experience. *Performance*  
713 *Enhancement & Health*, 6, 2, 75-81.

714 van Dijk, K.E.T., Westerink, J.H.T.M., Beute, F. and IJsselsteijn, W.A. (2017) Personal  
715 Informatics, Self-Insight, and Behavior Change: A Critical Review of Current  
716 Literature, *Human–Computer Interaction*, 32, 5-6, 268-96

717 Viseu, A. and Suchman, L. (2010) Wearable Augmentations. In J. Edwards, P. Harvey &  
718 P. Wade (eds) *Technologized Images, Technologized Bodies: anthropological*  
719 *approaches to a new politics of vision*, Oxford, New York: Berghahn Books

720 Wang Y-C, Kraut R, Levine JM (2012) To stay or leave? The relationship of emotional  
721 and informational support to commitment in online health support groups. In  
722 *Proceedings of CSCW 2012*. ACM, New York, 833–42

723 Wiltshire, G.R., Fullagar, S. and Stevinson, C. (2018) Exploring parkrun as a social  
 724 context for collective health practices: running with and against the moral imperatives of  
 725 health responsabilisation, *Sociology of Health and Illness*, 40, 1, 3–17

726 Woermann, N. and Rokka, J. (2015) Timeflow: How Consumption Practices Shape  
 727 Consumers' Temporal Experiences, *Journal of Consumer Research*, 41 (April), 1486-508

728 Zhang, Y-D., Li, D-J., Zhang, C-b. and Zhang, H-l. (2019) Quantified or nonquantified:  
 729 How quantification affects consumers' motivation in goal pursuit, *Journal of Consumer*  
 730 *Behaviour*, 18, 2, 120-134

731

732 Data underpinning this study are not available to share, as participants did not consent  
 733 for data sharing.

734